Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

The tallest tree in proportion to its girth. The largest shafts are probably over one hundred feet, and the greatest circumference about seventeen or eighteen feet; while many trees no doubt exceed one hundred and sixty feet in height.

SASSAFRAS (*Sassafras officinale*).

Height	71⅔	feet.	Mean of	3	trees.
Trunk	52½	“	“ “	2	“
Circ.	7⅔	“	“ “	3	“

Though usually considered one of the “underwoods,” this tree is not unfrequently of these dimensions in very rich woods.

FOSSIL INSECTS FROM THE ROCKY MOUNTAINS.

BY SAMUEL H. SCUDDER.

Several years ago, Professor William Denton discovered in shales lying near the junction of the Green and White Rivers in Colorado (?), the first traces of tertiary insects on this continent. They were found in two distinct localities, sixty miles apart, the specimens from one place differing from those of the other, not only specifically, but also to a very great extent in the general character of the whole assemblage.* Reports of these discoveries attracted the attention of those who afterward explored parts of the Rocky Mountain region, and repeated inquiries were made concerning the exact location of the insectiferous beds. These explorations have resulted in the discovery of more fossil insects in the same general region by Mr. F. C. A. Richardson, who accompanied Major Powell's exploring party, and by Dr. Hayden in some of his numerous and fruitful researches. The latter brought home only three specimens, two flies and an ant, but the collections of the former are more numerous and afford material for the present notice.

Some doubt exists as to whether the insects discovered by Prof.

---

* See Proc. Bost. Soc. Nat. Hist., xi, 117-118. A detailed and illustrated Report upon these fossils, which Mr. Denton kindly lent for a long period of examination, will shortly be published.

Denton were found in Colorado (as stated) or Wyoming Territory. Those now under consideration purport to come from the latter district,* as stated in the subjoined letter to the editors, though far removed from the vicinity of Chagrin Valley or Fossil Cañon, the two localities explored by Professor Denton. About one hundred slabs, mostly of very small size, were brought away; these contain at least one hundred and seventy-five specimens, including in that number all the reverses. Of these specimens thirty-five cannot be referred with certainty to any subordinal group, since they consist merely of abdominal segments or blurred and distorted fragments, the affinities of which can only be rudely surmised. The remainder are referable to nearly forty species, belonging to the following groups, mainly arranged in the order of numerical superiority:

Diptera,	thirteen	species,	sixty-six	specimens.
Coleoptera,	twelve	"	fifty-two	"
Hymenoptera,	three	"	five	"
Hemiptera,	two	"	four	"
Orthoptera,	two	"	four	"
Neuroptera,	two	"	two	"
Arachnida,	three	"	six	"
Myriapoda,	one	"	one	"

Of the Diptera, one-half the specimens belong to a single or possibly two heavy-bodied species of small size, which, although invariably wingless, are presumed to be so only by mutilation, since exceedingly few wings are preserved on any of the stones; of the other half, two-thirds are *Tipulidæ* or *Mycetophilidæ* and include five of the species, while the remaining sixth comprises about half the species and belongs to various groups. Of the Coleoptera, fully one-half the species and about seven-tenths of the specimens belong to the *Curculionidæ;* the others mostly to the *Staphylinidæ* and *Carabidæ.* These two suborders, flies and beetles, comprise the bulk of the determinable objects — nearly six-sevenths of the specimens and more than five-eighths of the species. The Hymenoptera consist of a small ant, a Pteromalus-like insect, and one rather obscure form. The Hemiptera are represented by an insect resembling Issus and another apparently belonging to the *Tingidæ.* In the Orthoptera there are only legs of a Locustarian about as large as our common Phylloptera and a cricket, perhaps of the genus Nemobius. Two Phryganeids are represented by wings, one of them doubtfully located in this family. Of the gally worm and spiders little can be said.

---

* "I discovered and collected the fossil insects on the Green River in Wyoming Territory on the line of the Union Pacific Railroad about forty miles this side (east) of Salt Lake City. Or, to be more precise, the locality is five miles west of Green River City and on the railroad track. The latitude and longitude as near as I can make out from very imperfect memoranda are as follows, *Latitude* 41° 40′ north, *Longitude* 109° 50′ west. I had a short time previous found two very imperfect fossil insects but could find no strata nor spot where any number could be obtained. I was then with the courteous explorer, Major Powell, and left the fossils with him. I returned a short time after (on account of poor health), and, while looking for fossil fish and leaves, found a stratum some two or three inches thick exposed in a railroad cut from ten to twenty feet from the top rock or sandstone; the rock, as near as my memory will serve me, dips to the southwest at quite an angle. The shale or portion of the shale on which the insects are found runs in a circle from the northeast to the southwest, as if on the border of a small lake. I also noticed that the fish are not in a regular order as the insects, which cover a space about two feet wide and form a ring or belt around the lake as near as I could make out from the appearance. The fossil insects, fishes, leaves and fruit abound in that section but are being rapidly worked up, thanks to the diligence of our naturalists and the kindness of the Superintendent, Gen. Sickles of the Union Pacific Railroad, to whom I am greatly indebted."—F. C. A. RICHARDSON, *Pres. Chicago Natural History Society, Aug.* 5, 1872.

The interest in these objects is greatly increased when they are compared with the others brought from the same region. In the first place, the shales from "Chagrin valley" and "Fossil Cañon," are dark gray in tint, while those containing the insects now under discussion are of a reddish clay-color; the former are much more closely grained and of a firmer texture, resembling lithographic stone, and the objects are consequently better preserved — indeed on some slabs the hairs along the edge of a wing in a Thrips may be counted.

Again, the faunæ of the several localities differ. We have already remarked in a previous paper that this is the case with the specimens from Chagrin Valley and Fossil Cañon, although the stones themselves are similar in character. *Mycetophilidæ* and other Diptera are found in both places, "but in Fossil Cañon, the variety and abundance are proportionately greater; the ants, the moths, the Thrips and nearly all the smaller Coleoptera are restricted to Fossil Cañon, while the larvæ come from Chagrin Valley." The same is true of Mr. Richardson's specimens; not a single species can be definitely referred to any of those found by Prof. Denton, and the assemblage of species is different: thus, a single fragment of an elytron is the only Curculionid in the Chagrin Valley shales, and probably it is generically distinct from all those mentioned above. The type of fly spoken of as so abundant in the shales collected by Mr. Richardson is represented in the previous collection only by a single specimen from Fossil Cañon, probably belonging to a different genus. The two forms mentioned under the name of Issus, one from Richardson's shales and the other from Chagrin Valley, are not congeneric; and the same is probably true of the ants from these shales and from Fossil Cañon. It is in the *Mycetophilidæ* and *Tipulidæ*, however, that we find the closest resemblance between the different collections; in the comparative abundance and variety of these insects, the shales worked by Mr. Richardson may best be compared to those of Fossil Cañon, but in the former the specimens are too poorly preserved to make a close identification very satisfactory; the genus Dicranomyia is apparently found in all three localities. Comparing the assemblages of species, we find that Diptera and Coleoptera are the prevailing forms in each,* but that within these groups the types differ in a remarkable manner, according to their several localities; the Orthoptera and Neuroptera, the spiders and Myriapoda of the later discovered beds are wholly wanting in the earlier; the Lepidoptera and Physopoda are found only in Fossil Cañon, and no trace of ants appears in Chagrin Valley, though occurring in the other two places and also in the locality examined by Dr. Hayden.

These results should not surprise us, since in the two rich quarries of Œningen, Baden, one of which is only a mile distant from, and about one hundred and fifty feet above the other, the insects are found to be specifically distinct throughout. Probably some of these conclusions will be modified by a more searching study of the remains under examination; unquestionably they will be altered by further researches in the field; and certainly these tertiary beds of the Rocky Mountains appear exceedingly rich in insect remains, and are worth careful exploration; that they extend over several successive geological stages seems probable from the great diversity of character in these fragmentary collections, and also from Prof. Denton's statement that the shales in which they occur have a thickness of a thousand feet.

---

* All the insects as a rule are rather small in size.